

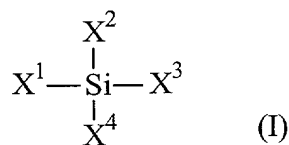
WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTERS  
PATENT OF THE UNITED STATES IS:

1. A composition, comprising:

(a) a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor;

(b) at least one selected from the group consisting of:

a silicon compound having the following formula (I):



wherein  $\text{X}^1$ ,  $\text{X}^2$ ,  $\text{X}^3$  and  $\text{X}^4$  each independently represent an alkoxy group or a halogen atom,

a hydrolyzate of said silicon compound (I), a silicone resin, silicone resin precursor and silica; and

(c) a liquid medium.

2. The composition as claimed in claim 1, wherein a ratio of (a) to (b) ranges from 20/1 to 1/100 in terms of moles of titanium atoms in (a)/moles of silicon atoms in (b).

3. The composition as claimed in Claim 1, wherein the photocatalytic titanium oxide precursor in (a) is a titanium alkoxide.

4. The composition as claimed in Claim 1, wherein the silicone resin precursor in (b) is at least one selected from the group consisting of a silane compound, a silazane, and a mixture thereof.

5. The composition as claimed in Claim 1, which is a dental and orologic composition.

6. The composition as claimed in Claim 1, wherein said liquid medium is selected

from the group consisting of water, alcohol, a mixture of water and alcohol, acetone, methyl ethyl ketone, ethyl acetate, chloroform, toluene, hexane, and combinations thereof.

7. The composition as claimed in Claim 1, further comprising a thickener.

5 8. The composition as claimed in Claim 1, further comprising at least one particle selected from the group consisting of silver, copper, zinc, metal salt, and a mixture thereof.

9. A dental and orologic composition, comprising a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor.

10. A dental and orologic composition, comprising a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor, and a liquid medium.

10 11. A film, comprising the composition as claimed in Claim 1.

12. The film as claimed in Claim 11, which is present on a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, tooth crown restorative materials, dentures, denture bases, denture rebases, orthodontic bases, wires, bridges, mouth pieces, teeth restored with composite resin, teeth coated with dental manicure, and combinations thereof.

15 20 13. A method for making a film, comprising applying the composition as claimed in Claim 1 to a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, and combinations thereof.

14. A method for preventing or curing oral diseases or dental diseases, which comprises:

applying the composition as claimed in Claim 1 to a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous

membranes, dental materials not in the mouth, and combinations thereof, to form an applied composition;

drying said applied composition to form a photocatalytic titanium oxide-containing film on said surface; and

5 exposing said film to light.

15. A method for preventing or removing halitosis, which comprises:

applying the composition as claimed in Claim 1 to a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, and combinations thereof, to form an applied composition;

drying said applied composition to form a photocatalytic titanium oxide-containing film on said surface; and

exposing said film to light.

16. A method for preventing or retarding the discoloration of teeth or dental materials, which comprises:

applying the composition as claimed in Claim 1 to a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, and combinations thereof, to form an applied composition;

drying said applied composition to form a photocatalytic titanium oxide-containing film on said surface; and

exposing said film to light.

17. A method for bleaching discolored teeth, which comprises:

applying the composition as claimed in Claim 1 to a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, and combinations thereof, to form an applied composition;

drying said applied composition to form a photocatalytic titanium oxide-containing film on said surface; and

exposing said film to light.

18. A method for treating dental materials, which comprises:

applying the composition as claimed in Claim 1 to a surface of a dental material, to form an applied composition;

5 drying or baking or drying and baking said applied composition to form a photocatalytic titanium oxide-containing film on said surface; and exposing said film to light.

19. The method as claimed in Claim 18, wherein said dental material is not in a mouth.

10 20. A method for producing a dental and orologic composition, comprising admixing a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor with said dental and orologic composition.

21. A film, produced by a process comprising:

15 applying the composition as claimed in Claim 1 to a surface, to form an applied composition; and

drying or baking or drying and baking said applied composition to form a photocatalytic titanium oxide-containing film on said surface.

20 22. The film as claimed in Claim 21, wherein said surface is a surface of at least one selected from the group consisting of teeth, gums, dental materials fitted in the mouth, oral mucous membranes, dental materials not in the mouth, tooth crown restorative materials, dentures, denture bases, denture rebases, orthodontic bases, wires, bridges, mouth pieces, teeth restored with composite resin, teeth coated with dental manicure, and combinations thereof.

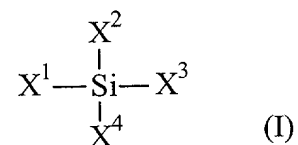
25 23. An article, comprising a surface and the film as claimed in Claim 21 in contact with said surface.

24. A method for preparing a dental and orologic composition, comprising admixing:

(a) a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor;

(b) at least one selected from the group consisting of:

a silicon compound having the following formula (I):



5 wherein  $\text{X}^1$ ,  $\text{X}^2$ ,  $\text{X}^3$  and  $\text{X}^4$  each independently represent an alkoxy group or a halogen atom,

a hydrolyzate of said silicon compound (I), a silicone resin, silicone resin precursor and silica; and

(c) a liquid medium.